SCS 42790jon.dec 2/5/96 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

John Dash and Patrick S. Keefe Art Unit

Serial No. 08/439,712

Filed: May 12, 1995

For: LOW TEMPERATURE NUCLEAR FUSION

Examiner: BEHREND, H.

DECLARATION PURSUANT TO 37 C.F.R. § 1.132

TO THE COMMISSIONER
OF PATENTS AND TRADEMARKS:

Sir:

1. I, Dr. John Dash, am a co-inventor on the application referenced above, entitled "Low Temperature Nuclear Fusion." I have read and understood the specification and claims of this application.

2. I received a Bachelor of Science in Metallurgy from Pennsylvania State University in 1955. I then received a Masters degree in Metallurgy from Northwestern University in 1960. Finally, I received a Doctorate in Metallurgy from Pennsylvania State University in 1966.

3. I have had extensive training and experience in scientific research activities, including the physical and chemical aspects of electrochemistry, since at least as early as 1955. I have been a professor at Portland State University since

1966. I currently am employed as a full professor of physics at Portland State University.

4. In January of 1996, I conducted experiments to again verify that the apparatus and method described in my pending, and progenitor, applications consistently and reproducibly results in the production of excess energy.

5. I set up electrolysis cells as described in my pending application. More specifically, two containers were selected to be used as electrolysis cells. These containers, referred to hereinafter as cells, were of identical construction and size. Each cell was placed in separate, insulated containers, each of which had an insulated top with an aperture there through. Mercury thermometers were placed through these apertures to measure the air temperature in each insulated container. This was to avoid any possibility of there being a "hot-spot" next to the cell containing the palladium electrode to preclude any possibility that excess temperature produced by the palladium cell was the result of artifact.

The insulating properties of the insulated containers were identical. This was determined by running two separate experiments, wherein the two insulated containers used for the palladium and platinum cells were switched from the first experiment to the second experiment. Placing the palladium and

platinum cells in the different insulated containers had no impact on the results obtained.

A control cell was produced having two platinum electrodes. These electrodes were immersed in an electrolyte containing 0.06 mole fraction of sulfuric acid in D_2O. The experimental cell contained a platinum anode and a palladium cathode. The electrolyte of the experimental cell was identical to that of the control cell, namely 0.06 mole fraction of sulfuric acid in D_2O. The palladium cathode was 35 microns thick, 5.5 mm wide, 13 mm long, and weighed 0.055 grams. Both of the cells had catalyst suspended above the electrolyte to recombined the offgases.

Each cell was placed in a separate, but identical, insulated container. The cells were connected in series to a power supply using wires sealed through the tops of the insulated containers. An ammeter and a voltmeter were placed in the circuit to determine the power supplied to each cell. The mercury thermometers were inserted through the apertures in the top of the insulated containers and positioned about 2 centimeters above the top of each cell.

On January 30, 1996, the cells were allowed to run for a period of about seven hours. The power input to each cell was 1.37 watts, and the current was 0.5 amperes at the peak

temperature. On January 31, 1996, the cells also were run for a period of about seven hours. Again, the power input to each cell was 1.37 watts at peak temperature, and the current was 0.5 amperes.

Although the power input to each cell was 1.37 watts, the power output of the experimental cell was greater by as much as 0.3 watts. In one hour, the palladium cell produced about 250 calories more than the control cell. If this excess energy was caused by a chemical reaction, the maximum amount of energy that could by produced would be about 50 calories, which would have completely consumed the palladium cathode. Instead, the palladium cathode produced about 100 times more energy than can be produced by a chemical reaction.

6. In the previous paragraph, I stated that a chemical reaction would have completely consumed the palladium cathode, and would not have produced the amount of energy stated. This can be demonstrated mathematically. It is known that the change in temperature (ΔT) across a body is equal to the thermal resistance (R) times the heat flux (I). That is, $\Delta T = RI$. For the present experiments, ΔT is the difference between the air temperature in the container versus the ambient temperature. For the control cell, $\Delta T_C = R_C I_C$. For the experimental cell, $\Delta T_D = R_D I_D$. "C" stands for control and "D" stands for experimental.

In these equations, R is the same for both cells. The same insulating material was used so that the thermal resistance was the same for both cells.

The control cell was allowed to run until it reached a steady-state temperature, which generally took about an hour. After an hour, the control cell reached this steady-state temperature beyond which it would not increase. At this time, the input power was equal to the output power. The heat flux therefore was known to be the same as the power input, which was 1.37 watts. Moreover, the power input for both cells was the same.

ΔT was 9°C for the control cell, and ΔT was 11°C for the experimental cell. There are now two equations for the thermal flux for the experimental cell and the control cell as stated above. There is only one unknown value, that is the value for the thermal flux of the experimental cell, I_D. Solving for I_D shows that the thermal flux for the experimental cells was 1.67 watts. The control cell had a thermal flux of about 1.37 watts, so that the difference between the control cell and the experimental cell was about 0.3 watts.

250 calories of excess heat would be produced if a heat flux of 0.3 watts was maintained for an hour. By reference to chemical tables, it can be determined that the reaction of one

mole of palladium (molecular weight = 106 grams) in an exothermic reaction produces about 50,000 calories. The palladium cathode used in these experiments weighed less than 0.1 gram (actual weight was about 0.055 grams). This equals less than about 1/1000 of a mole. As a result, about 50 calories would be produced after about one hour if the reaction involved an exothermic reaction of the palladium cathode. The present results clearly demonstrate that a much greater amount of energy is being produced, namely 250 calories as compared to 50 calories.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Tile 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or patent issued thereon.

Date

John Dash

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Sir:

1. I, Robert J. O'Brien, am a Professor of Chemistry at Portland State University. I received my Ph.D in Physical Chemistry from the University of Florida in 1970. I have taught undergraduate classes and graduate classes in physical chemistry since receiving my Ph.D. These classes include thermodynamics, as well as the chemistry of electrolytic cells. I am quite familiar with the theoretical principles governing the interconversion of thermal, chemical and electrical energy, work and heat within electrolysis cells.

2. I have no direct collaboration with Dr. John Dash. I have served as a thesis committee member for several of his students who have studied excess power production in electrolysis experiments.

3. Dr. Dash asked me to review his experiments to determine whether I concurred with his conclusion that they produce excess power production in a cell containing a palladium electrode relative to a platinum electrode. I have observed Dr. Dash's experiments. I also have read Dr. Dash's declaration that states the experimental set-up for these experiments. The experimental details directly observed by me were the same as stated in Dr. Dash's declaration.

More specifically, the cells used in the experiment were of identical construction and size. These cells were placed in separate insulated containers, which had insulated tops with apertures therethrough. Mercury thermometers were placed through these apertures to measure the air temperature in the container to preclude any possibility that excess temperature in the palladium cell was the result of differences in the air temperature. I understand that the insulating properties of the insulated containers were identical.

A control cell was produced having two platinum electrodes. I understand that the electrolyte contained 0.06 mole fraction of sulfuric acid in D_2O. The experimental cell contained a platinum anode and a palladium cathode. I understand that the electrolyte in the experimental cell was identical to that of the control cell.

Each cell was placed in an insulated container. The cells were connected in series to a power supply using wires sealed through the tops of the insulated containers. An ammeter and a voltmeter were placed in the circuit to determine the power supplied to each cell. The mercury thermometers were positioned about 2 centimeters above the top of each cell.

4. Although the power input to each cell was the same, i.e., 1.37 watts, the power output of the experimental cell (palladium cell) was as much as 0.3 watts more than that produced by the control cell (platinum cell). This result appears to be reproducible.

5. It is my opinion that Dr. Dash's recent experiments consistently show excess power production in the cell containing the palladium electrode relative to the cell containing the platinum electrode. This power production appears to be beyond what could be explained by any transient chemical effect due to contamination or impurities.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the

United States Code and that such willful false statements may jeopardize the validity of the application or patent issued thereon.

Date

Dr. Robert J. O'Brien

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